

SECTION 08710 - DOOR HARDWARE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Related Documents
 - 1. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Related Work:
 - 1. Threshold Sealant: Division 7 for Joint Sealants

1.2 QUALITY ASSURANCE

- A. Supplier Qualifications:
 - 1. The hardware supplier must have in his/her employment an Architectural Hardware Consultant (AHC), as recognized by the Door And Hardware Institute, with a minimum of 10 years of Architectural Hardware experience, who shall be responsible for the detailing, scheduling, and ordering of the finish hardware for this Contract.
- B. Design Criteria:
 - 1. Provide Underwriter's Laboratory listed hardware for fire or accident hazard where scheduled or required to maintain rating of openings. Comply with requirements of door and doorframe labels. Comply with NFPA No. 80 and local codes that are used in the area of the project.

1.3 SUBMITTALS

- A. Hardware Schedule: Within 10 days after receipt of a contract for the finish hardware, prepare a complete schedule and submit, in 6 copies, for review.
 - 1. Do not order hardware until a corrected and approved copy of the schedule is returned to the supplier.
 - 2. Include a catalog cut of each different hardware item to be provided.
 - 3. This schedule shall indicate the following details:
 - a. Door numbers
 - b. Frame materials
 - c. Location
 - d. Hand of door
 - e. Size and thickness of door
 - f. Degree of opening
 - g. Door material
 - h. Type of attachment
 - i. Closer mounting
 - j. And all other pertinent information regarding the door and the quality and type of hardware to be furnished
- B. Templates: Within 10 days after receipt of the approved corrected hardware schedule, submit 4 sets of templates and schedules to the wood door and hollow metal door and frame suppliers.

C. Contract Closeout Submittals:

1. Furnish three (3) copies of maintenance manuals covering the finish hardware for this job. Each manual shall consist of printed sheets from the hardware manufacturer bound in a three-ring binder and properly indexed.
2. Include address and telephone number of hardware suppliers in maintenance manuals.
3. Maintenance instruction and parts list for each type of operating hardware including:
 - a. Locks
 - b. Exit devices
 - c. Closers
 - d. Warranty: Provide written warranty covering requirements of Article 1.5.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver hardware to the job site only after proper provision for storage has been made.
- B. Properly package and clearly label each item to indicate exact location for which intended.
- C. Hardware supplier shall authorize his representative to be present when all finish hardware is delivered to the site and shall check in each item and turn over to General Contractor for storage in a secure place.

1.5 WARRANTY

- A. Furnish three (3) copies of the following to be included in Maintenance Manuals:
 1. Warranty against mechanical failure of door closers for a ten-year period, and exit devices shall have three years.
 2. Warranty against failure of parts for all hardware except door closers and exit devices for a two-year period. Warranty shall include cylinder locks.
 3. Starting date for all warranty periods to be date of substantial completion.

PART 2 - PRODUCTS

2.1 BASIS OF DESIGN

- A. Basis-of-Design Products: The design for each hardware item specified is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.

1. Hinges:	Bommer, Hager, Stanley	BM
2. Exit Devices:	Von Duprin	VD
3. Door Closers:	LCN	LC
4. Controllers & Card Readers	Locknetics	LN
5. Locksets:	Schlage Lock	SC
6. Thresholds & Weatherstrip:	National Guard, Reese, Zero	NG
7. Stops & Door Trim:	Ives, Rockwood, Signature Brass	IV
8. Overhead Stops:	Glynn Johnson	GJ
- B. Above products are listed as minimum standards. A product that meets the same quality and security standards as above could be considered if submitted and accepted by addendum prior to bid.

2.2 SCHEDULED HARDWARE

- A. Requirements for design: grade, function, finish, size and other distinctive qualities of each type of Builders Hardware is indicated in the Hardware Schedule at the end of this section. Hardware manufacturer's designation numbers identify products to be incorporated in the Work.
- B. Manufacturer's Product Designation: One or more manufacturers are listed for each hardware type required. An Asterisk (*) before a manufacturer's name indicates whose product designation is used in the Hardware Schedule for purposes of establishing minimum requirements. Provide either the product designated or where more than one manufacturer is listed, the comparable product of one of the other manufacturers that comply with requirements including those specified elsewhere in the section.

2.3 MATERIALS AND FABRICATION

- A. Hand of Door: The drawings show the direction of slide, swing or hand of each door leaf. Furnish each item of hardware for proper installation and operation of the door movement as shown.
- B. Base Metals: Produce hardware units of the basic metal and forming method indicated using the manufacturer's standard metal alloy, composition, temper and hardness. Do not furnish "optional" materials or forming methods for those indicated except as otherwise specified.
- C. Fasteners: Manufacture hardware to conform to published templates generally prepared for machine screw installation. Do not provide hardware that has been prepared for self-tapping sheet-metal screws except as specifically indicated.
 - 1. Furnish screws for installation with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match the hardware finish or if exposed in surfaces of other work to match the finish of such other work as closely as possible including "prepared for paint" in surfaces to receive painted finish.
 - a. Sex Bolts: Install door closer, door holders and exit devices on wood doors by means of thru bolts and sex nuts.
 - 2. Provide concealed fasteners for hardware units that are exposed when the door is closed except to the extent no standard units of the type specified are available with concealed fasteners. Do not use thru bolts for installation where the bolt head or the nut on the opposite face is exposed in other work except where it is not feasible to adequately reinforce the work.

2.4 HINGES, BUTTS AND PIVOTS

- A. Templates: Provide only template-produced units.
- B. Screws: Furnish Phillips flat-head all purpose or machine screws for installation of units except furnish Phillips flat-head all purpose or wood screws for installation of units into wood. Finish screw heads to match surface of hinges or pivots.

- C. Hinge Pins: Except as otherwise indicated provide hinge pins as follows:
 - 1. Steel Hinges: Steel pins.
 - 2. Non-ferrous Hinges: Stainless steel pins.
 - 3. Exterior Doors: Non-removable pins.
 - 4. Interior Doors: Non-rising pins.
 - 5. Tips: Flat button and matching plug finished to match leaves.
- D. Number of Hinges: Provide number of hinges indicated but not less than three (3) hinges per door leaf for doors 90 inches or less in height and one additional hinge for each 30 inches of additional height.
- E. Size of Hinge Leaves: 4.5 inches high, except 5 inches for doors over 3 feet 6 inches wide.
- F. Width of Hinges: Shall be sufficient to clear trim projection when door swings 180 degrees.
- G. All hinges shall comply with the current issue of the American National Standard for butts and hinges ANSI A156.1.

2.5 KEYING

- A. The hardware supplier shall make available to the Architect and/or Owner a representative for the purpose of consulting and reviewing the project's keying requirements and make a written proposal of the complete key system.
- B. Proposed key plan shall include expansion potential for Owner's future requirements.
- C. All exterior doors shall be constructed master keyed.
- D. Keys Required: Furnish quantity of keys as follows:
 - 1. Three (3) change keys
 - 2. Ten (10) construction keys.
 - 3. Six (6) new master keys
 - 4. Four (4) new grand master keys
- E. Grandmaster and master keys shall be stamped with their respective set symbols.
- F. All keys shall be nickel silver.

2.6 CYLINDRICAL TYPE LOCKSETS

- A. All locksets and latchsets shall have steel cylindrical case with interior parts made of steel or bronze. No plastic, diecast or aluminum mechanisms will be allowed.
- B. All steel parts shall be bronze plated or zinc dichromate coated to resist rusting and corrosion.
- C. Locksets shall have access to the cylinder without removing the lockset from the door.
- D. Furnish wrought boxes with all lock strikes.
- E. Strikes lips shall not project more than 1/8 inch beyond the frame at single doors or face of inactive leaf at pairs of doors.

2.7 DEADLOCKS

- A. Deadlocks shall be cylindrical or tubular type with interior parts made of steel or bronze.
- B. All steel parts shall be bronze plated or zinc dichromate coated to resist rusting and corrosion.

2.8 CLOSERS AND DOOR CONTROL DEVICES

- A. Closer shall be certified to exceed 10,000,000, full operating cycles by a recognized independent testing laboratory.
- B. Surface type door closers shall be fully hydraulic, full rack and pinion action with cast iron case and ten-year warranty.
- C. Separate adjusting valves shall be provided for closing speed, latching speed and back-check.
- D. Adjusting valves shall be concealed and adjustable only with special wrench and shall be seated with "O" type ring.
- E. Manual door closers with Pressure Relief Valves are not allowed.
- F. All closers shall be multi-sized closers. Exterior and interior doors and fire rated doors shall have closers that will adjust from size 1 thru 5, and adjust opening force of 5 lbs. pressure to open interior doors to meet ADA requirements.
- G. All doors to be supplied with parallel arm closers unless otherwise noted.
- H. Closers must be certified by BHMA and ANSI as Grade 1 closers.

2.9 EXIT DEVICES

- A. Provide fire exit devices as listed in the "Door Assembly Type" list.
- B. All working parts must be made of stamped steel zinc dichromate parts. No diecast, plastic or cast parts shall be used.
- C. All devices must meet the following test: Push bar must release with 32 lbs. maximum pressure when 250 lbs. of pull is applied against the pull side of door.
- D. Provide all exit devices with roller strikes, dead-latching latch-bolts, and a fluid damper (to decelerate push pad on its return stroke thus reducing noises).
- E. Strike shall be roller type to minimize wear.

2.10 DOOR TRIM UNITS

- A. Material shall be brass, bronze or stainless steel as appropriate for required finish. Brass and bronze material to be 0.050 inches minimum thickness and stainless steel to be 0.050 inches minimum thickness. Edges of plates to be beveled and polished except lower edge can be square.

- B. Kick plates shall be 10 inches high. Mop plates shall be 4 inches high and armor plates shall be 42 inches high.
- C. Width of plates when applied to push side of door shall be 2 inches less than door width on pairs of doors and 2 inches less than door width on single doors. When applied to pull side of door, plates shall be 2 inches less than door width.
- D. Push Plates: Plate shall be 0.050 stainless steel.
- E. Pull Plates: Plate shall be wrought bronze 0.050 B & S. Grip shall be extruded bronze or stainless located on center of plate.

2.11 TOOLS FOR MAINTENANCE

- A. Furnish a complete set of specialized tools as needed for Owner's continued adjustment, maintenance and removal or replacement of finish hardware.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: General Contractor shall install all finish hardware. Hardware supplier shall provide a hardware technician to be present to assist and/or instruct those applying finish hardware.
 - 1. Furnish all items of hardware with attachment screws, bolts, nuts, etc., as required to attach hardware to type of material involved and with finish to match hardware with which they are to be used. Make all attachments to metal by template machine screws.
 - 2. Provide through bolts and sex nuts for door closers, forearm shoes of closers, holding devices and panic hardware mounted on doors or panels.
 - 3. Attach hardware to masonry or concrete with expansion bolts or similar drilled anchors to develop full strength of attached device.
 - 4. Run weatherstripping or sound-stripping full height of both jambs and full width of head. Run thresholds full width of opening. Run door bottoms full width of doors. Set expansion anchors in solid masonry, not mortar joints. Install thresholds with continuous threshold anchors cast into slab. Set thresholds in caulking by sealant contractor.
- B. Mounting Heights: Per Steel Door Institute recommendations and as follows.
 - 1. Pull on opposite side of panic device shall coincide with exit device template.
 - 2. Push plate shall be installed to conceal through bolts of pull.
 - 3. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Wherever cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage and reinstallation or application of surface protections with finishing work specified in the Division 9 Section.
 - 4. Set units level, plumb and true line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
 - 5. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
 - 6. Openings: Other than those doors that are restricted to less than 180 degree opening by building or by overhead holders or stops, all butts and/or closer arms shall be of sufficient size to allow full 180 degree opening of doors.

3.2 PROTECTION

- A. Do not install door silencers, kick-plates, push-plates, door bottoms, and wall stops until after painting is complete. Loosen locksets and panic hardware prior to painting and re-tighten after painting is complete. Mask all hardware or otherwise protect during painting operation.

3.3 ADJUST AND CLEAN

- A. Adjust and check each operating item of hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate freely and smoothly as intended for the application made.
- B. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy of a space or area, return to the work during the week prior to acceptance or occupancy and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of HVAC equipment.
- C. Instruct Owner's personnel in proper adjustment and maintenance of hardware and hardware finishes during the final adjustment of hardware.

3.4 HARDWARE SCHEDULE

- A. It is intended the following schedule include all item of finish hardware necessary to complete the work. If a description is found in the schedule, such as a missing item, improper hardware for frame, door or fire codes, the Specifications will be the deciding document.
- B. All items shall be of proper type for attaching securely to type of material on which they occur.
- C. Finishes: As scheduled.
- D. Note: Verify all labeled wood doors are category "A"
- E. All closers to be mounted parallel arm unless otherwise noted, no closers are to be mounted on corridor side.

GROUP 1

Door Number: 1557-1
Single Interior Door
Labeled
Each Door To Have:

Butts	3 ea.	(BM)	BB5000-450	US26D
Lockset	1 ea.	(SC)	D70PD RHO X 10-025	US26D
Closer	1 ea.	(LC)	4011 X SNB	AL
Kickplate	1 ea.	(IV)	8400 10"x2" LDW	US32D
O/H Stops	1 ea.	(GJ)	90S	US32D
Smoke Seal	1 set	(NG)	2525 (Head & Jambs)	

GROUP 2

Door Number: 1556-1

Single Interior Door Lead Lined
Labeled

Each Door To Have:

Pivots	1 Set	(IV)	7226 w/ 7226 INT (For 4'-0" Door)	US26D
Lockset	1 ea.	(SC)	D70PD RHO X 10-025	US26D
Electric Strike	1 ea.	(VD)	6113	
Power Supply	1 ea.	(VD)	PS861	
Closer	1 ea.	(LC)	4811 X SNB (For 4'-0" Door)	AL
Controller	1 ea.	(LC)	7981	
Actuator	2 ea.	(LC)	7910-956	
Pneumatic Tubing	100'	(LC)	7910-925	
Kickplate	1 ea.	(IV)	8400 10"x2" LDW	US32D
Stops	1 ea.	(IV)	WS401CCV	US26D
Smoke Seal	1 set	(NG)	2525 (Head & Jambs)	

END OF SECTION 08710